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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/817,141	04/02/2004	John L. Stoffel	200400537-1	1498

22879 7590 12/29/2006  
HEWLETT PACKARD COMPANY  
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INTELLECTUAL PROPERTY ADMINISTRATION  
FORT COLLINS, CO 80527-2400

EXAMINER
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CORDRAY, DENNIS R

ART UNIT	PAPER NUMBER
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1731

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/29/2006	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	10/817,141	STOFFEL ET AL.	
	Examiner	Art Unit	
	Dennis Cordray	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 04 December 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1 and 5-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29-42 is/are allowed.
- 6) ☒ Claim(s) 1,5-13,16-20,23,24,27 and 28 is/are rejected.
- 7) ☒ Claim(s) 14,21,22,25 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 September 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)          | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Arguments***

1. By this Office Action, the finality of the previous Office Action is hereby vacated and prosecution reopened.

Applicant's amendment, filed 12/04/2006, has overcome the rejection of claims 1 and 5-20 are rejected under 35 U.S.C. 103(a) unpatentable over Miyamoto et al or Nigam ('023) or Nigam ('539) in view of Abe et al and Nakamura et al. Accordingly, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made as detailed below.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action: The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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2. Claims 1, 5-6, 11-13, 18-20, 23-24 and 27-28 are rejected under 35

U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Cousin et al (4554181).

Claim 1, 11, 23-24 and 27-28: Cousin et al discloses an ink jet recording sheet (print medium or printing paper) having a surface that includes a combination of a water-soluble polyvalent metal salt and a cationic polymer (Abs). The salts include  $\text{Al}^{3+}$ ,  $\text{Mg}^{2+}$  and  $\text{Ca}^{2+}$  salts combined with acid ions. Although not the preferred ions, chlorides and nitrates are nevertheless usable (col 5, lines 46-53 and 62-64), thus calcium nitrate and magnesium chloride are anticipated. A suitable commercially available cationic polymer is a guanidine-formaldehyde polymer (col 5, lines 15-18). The paper has recording properties that are not seen when either the metal salt or cationic polymer are used alone (col 2, lines 52-57). The salt rapidly dissolves ink applied to the paper during printing while the cationic polymer insolubilizes the dye in the ink to the paper (col 2, lines 58-60; col 3, lines 11-15). Use of the two components together improves density, water-fastness and sharpness of the image (col 3, lines 31-36).

Cousin et al does not explicitly disclose that the guanidine compound and metallic salt are disposed within the fibrous component of the substrate. Because paper is a porous substrate, the aqueous coating penetrates into the surface to some extent, or at least it would have been obvious to one of ordinary skill in the art to expect the coating to penetrate into the surface, thus the cationic polymer and metal salt is disposed within at least part of the fibrous component of the substrate.

Claims 5-6: The salt is used in an amount of 10 to 1000 parts by weight to 100 parts cationic polymer. The total amount of salt and polymer applied to the substrate is from 0.1 to 15 g/m<sup>2</sup> per side (col 6, lines 4-11). The paper can be a paper, synthetic paper or plastic film formed using any commercially available pulp (col 6, lines 12-13 and 29-41), thus has a fibrous substrate. The disclosed composition significantly overlaps the claimed composition.

Claims 12-13, 18: The cationic polymer and metal salt is applied by coating an aqueous composition on a formed sheet capable of sustaining its own weight by spraying, dipping or a size press (col 6, lines 14-16 and 42-51). The steps of providing a fibrous component, providing the cationic guanidine polymer and metal salt, and forming the substrate are inherent in the process. Introducing and mixing the cationic guanidine polymer and metallic salt with the substrate are performed by the coating process.

Claims 19-20: Examples are given of papers made comprising the cationic polymer and metal salt (cols 10-13, Examples 1-7).

3. Claims 7-10 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cousin et al (4554181) in view of Nigam (US 2003/0087112 A1).

The disclosure of Cousin et al is detailed in the immediately preceding rejection. Cousin et al does not disclose cationic guanidines having monomer units described by structural formulae I and II.

Claims 7-10, 16-17: Nigam ('112) discloses a fibrous substrate for printing (print medium) treated with a guanidine polymer as an image enhancing agent (Abstract). The guanidine polymer binds dyes to the substrate, creating a water fast and bleed resistant image (p 5, par 60). Treatment of base paper having a basis weight of at least 30 g/m<sup>2</sup> is disclosed (p 8, par 91). Paper includes printing paper, writing paper, drawing paper and board materials (p 8, par 89). The guanidine polymer is applied to the paper as a coating or sizing in an aqueous composition by conventional methods (size press, dip coating, reverse roll coating, extrusion coating, saturation, etc. The treatment amount is from 10 to 500 pounds of polymer per ton of substrate (p 7, par 79; p 8, pars 91, 94-95), thus, using the minimum disclosed base paper weight, the amount of guanidine polymer applied to the paper is at least 0.15 to 7.5 g/m<sup>2</sup>, which significantly overlaps the claimed range. The sizing process saturates the paper to various extents, thus guanidine polymer is disposed within the fibrous component of the substrate (p 8, par 94).

Nigam ('112) also discloses that the guanidine polymers have the claimed guanidine structures I and II (p 5, pars 56-59).

The art of Cousin et al, Nigam ('112) and the instant invention is analogous as pertaining to printing papers treated with guanidine polymers. The guanidine polymers disclosed by Cousin et al, Nigam ('112) provide the same properties of fixing dyes and imparting water fastness to a paper. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a guanidine polymer having monomeric units described by structural formulae I and II to treat the paper of Cousin et al in view of

Nigam ('112) or Nigam ('023) as a functionally equivalent option to provide bleed-resistant and water-fast images.

4. Claims 7-10 and 16-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cousin et al (4554181) in view of Nigam (6291023 B1) and Nigam (US 2003/0219539 A1).

The disclosure of Cousin et al is detailed in the immediately preceding rejection. Cousin et al does not disclose cationic guanidines having monomer units described by structural formulae I and II.

Claims 7-10, 16-17: Nigam ('023) discloses a coated paper for ink-jet printing (print medium) that comprises a fibrous substrate and a coating containing a guanidine polymer (Abstract; col 1, line 66 to col 2, line 5; col 2, lines 55-67). The fibrous substrate can be partially or wholly saturated with the coating (col 2, lines 65-66). The coating composition is applied in an amount from 50 to 500 lb/ton of substrate (col 3, lines 5-9) and the guanidine polymer is 1-100% of the coating composition by weight, or from 0.5-500 lb/ton of substrate (col 6, lines 56-59). Using a conversion factor taught by Nigam (US 2003/0219539 A1, col 13, par 12) that a coating amount of 50-500 lb/ton of substrate (for ink-jet printing paper) is equivalent to about 2 to 30 g/m<sup>2</sup> (p 13, par 212), the coating of guanidine polymer is applied in an amount from about 0.02 to about 30 g/m<sup>2</sup>, which significantly overlaps the claimed range. Examples are given of coating compositions having from 4.8-50% of guanidine polymer (corresponding to an

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application amount of 0.1 to 15 g/m<sup>2</sup>). The exemplary ranges also significantly overlap the claimed ranges.

Nigam ('023) also discloses the claimed guanidine structures I and II (col 8, line 40 to col 9, line 20).

Nigam ('023) discloses a process wherein the coating composition is applied by any conventional coating process, including surface coating and saturation techniques. The coating can infiltrate the paper, thus can be disposed within the fibrous component of the substrate (col 13, lines 16-50). Textiles suitable for the coating include those made from natural or synthetic fibers (col 12, lines 47-53). The guanidine polymer reacts with a dye to create water-fast high quality images (col 2, lines 10-25).

Nigam ('023) discloses printing media produced using the coating composition and used for ink-jet printing (cols 19-20, Example 3).

The art of Cousin et al, Nigam ('023), Nigam ('539) and the instant invention is analogous as pertaining to printing papers treated with guanidine polymers. The guanidine polymers disclosed by Cousin et al and Nigam ('023) provide the same properties of fixing dyes and imparting water fastness to a paper. It would have been obvious to one of ordinary skill in the art at the time of the invention to use a guanidine polymer having monomeric units described by structural formulae I and II to treat the paper of Cousin et al in view of Nigam ('023) and Nigam ('539) as a functionally equivalent option to provide bleed-resistant and water-fast images.

***Allowable Subject Matter***

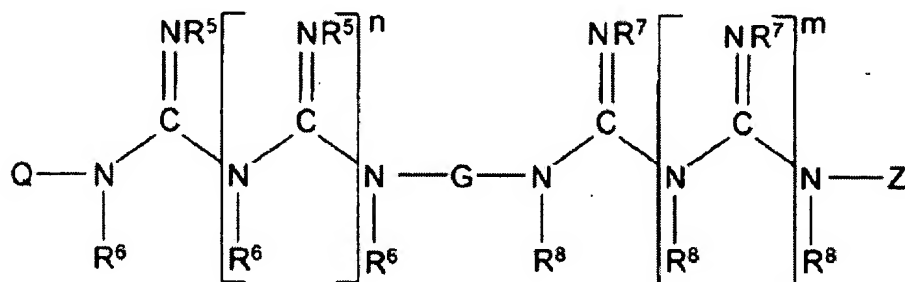
5. Claims 29-42 are allowed.



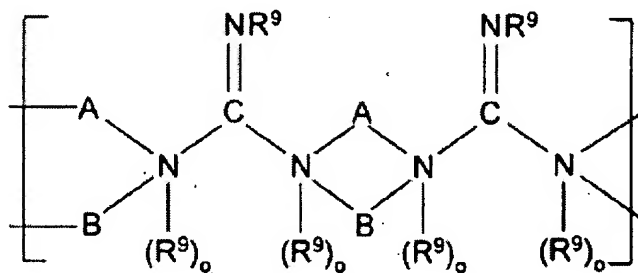
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6. Claims 14, 21-22, 25-26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 21, 25 and 29-42, guanidine polymers of the general formula



shown on p 10 of the instant Specification are disclosed in prior art (see Nigam '539, p 10, par 165 and Nigam '023, col 8, line 40 to col 9, line 21), wherein the group G is a straight or branched alkyl, alkenyl or alkynyl group, substituted or unsubstituted. The claimed polymers of the form



are not disclosed or made obvious by the prior art.

Regarding the metallic salt of Claims 22 and 26, the prior art requires a polyvalent metallic salt, whereas sodium chloride is a monovalent salt, which would not be expected to function similarly to a polyvalent salt.

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Regarding claim 14, Cousin et al discloses that the cationic polymer and metal salt cannot be suitably added to the paper at the wet end of the process or the polymer will act as a retention aid and be unable to insolubilize the dye (col 6 lines 52-56).

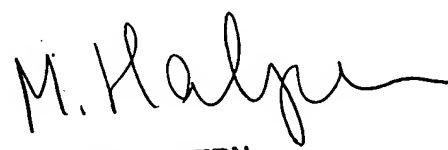
**Conclusion**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis Cordray whose telephone number is 571-272-8244. The examiner can normally be reached on M - F, 7:30 -4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

  
DRC

  
MARK HALPERN  
PRIMARY EXAMINER